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MICRODESMUS BAHIANUS, A NEW
WESTERN ATLANTIC WORMFISH
(PISCES: MICRODESMIDAE)

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The southernmost records of western Atlantic wormfishes were heretofore represented by single collections from Union Island in the Grenadines (Lesser Antilles) and the Rio Buritaca, Colombia. I here describe a new species from the mainland coast of Brazil which represents a significant range extension for the family Microdesmidae into the South Atlantic Ocean.

The Brazilian holotype was provided by Srta. Virginia Almeida and Dr. Naercio A. Menezes, Museu de Zoologia da Universidade de São Paulo; the Martinique specimen was lent by the Academy of Natural Sciences of Philadelphia (ANSP). The holotype has been deposited in the National Museum of Natural History, Smithsonian Institution (USNM). Measurements are in millimeters (mm); proportions are shown as percentages of standard length (SL) or head length (HL); methods are those of Dawson (1972).

Appreciation is expressed to Srta. Almeida and Drs. Menezes and James E. Böhlke for making specimens available for study. The drawing is by Harry L. Moore, Jr. This work was supported in part by National Science Foundation Grants GB 15295 and GB 31053X.

Microdesmus bahianus, new species

Figure 1

Holotype: USNM 209216 (64.8 mm SL); Brazil, Bahia, tidepool at Arembepe, approx. 12°45'S, 38°10'W; chemical ichthyocide; 9 July 1971; Virginia Almeida.



FIG. 1. *Microdesmus bahianus* USNM 209216; holotype; 64.8 mm SL.

Diagnosis: Dorsal fin origin posteriad of vertical from tip of adpressed pectoral fin; pectoral fin 11, rays unbranched; gill opening broad, not tubiform; total dorsal elements 42; 1st two dorsal spines not more closely spaced than fellows; vertical fins united in adults; body and head with dorsal and lateral stripes.

Description: Dorsal spines 12, dorsal segmented rays 30, total dorsal elements 42; anal rays 28; pectoral rays 11 (2); pelvic fin I,3; vertebrae $26 + 26 = 52$.

Measurements (mm) are followed by percent of SL or HL in parentheses. Caudal fin length 6.5 (10.0, percent of SL); least depth of caudal peduncle 2.9 (4.5); body depth at anal fin origin 4.5 (6.9); predorsal length to tip of lower jaw 16.9 (26.1); preanal length 36.0 (55.6); pectoral fin length 3.6 (5.6); pelvic fin length 3.3 (5.1); distance from pelvic fin insertion to anal fin origin 28.7 (44.3); head

length 6.5 (10.0). Diameter of pigmented eye 0.8 (12.3, percent of HL); distance from anterior margin of eye to tip of lower jaw 1.5 (23.1); snout length 1.0 (15.4); postorbital length 4.2 (64.6); tip of lower jaw to posterior angle of gape 1.4 (21.5).

Body moderately elongate, compressed, breadth at anal fin origin about 3 percent of SL, greatest breadth (4.2 percent of SL) at opercle; caudal fin distally rounded, not broadly expanded or fan shaped, upper and lower margins nearly parallel. Head rather long and slender, tapering anteriorly, its depth on vertical through eye about 73 percent of depth at pelvic fin insertion; interorbital slightly convex, its width about 75 percent of eye diameter; eye lateral, distinct, not concealed by a semi-opaque dermal membrane, its diameter about 80 percent of snout length; lower jaw prominent, somewhat narrowed in front to form a distinct symphyseal ridge, recurved dorsad and narrowly includes snout tip when mouth is closed; gape moderate, reaches vertical from near middle of posterior naris, slightly inclined; upper lip narrow across symphysis; expanded into a short, fleshy ellipse near angle of gape; lower lip with a short, narrow and distally rounded, adnate fleshy lateral expansion near angle of gape; dorsal surface of lower lip narrow posteriorly, broad and concave at sides, narrowing at symphysis to form an inverted V-shaped emargination; anterior naris a short tubule with flared orifice located dorsolaterally on snout tip; posterior naris a short simple tubule, dorsolateral, its posterior margin on vertical from anterior edge of eye; narial diameters approximately equal, about 4 in eye; longitudinal internarial snout ridges distinct but not especially prominent; teeth difficult to see, evidently in more than one row in each jaw; outer row with several separated, slightly enlarged, rounded conical teeth in front and with close-set, smaller, somewhat recurved and pointed teeth posteriorly; apparently without enlarged caniniform teeth.

Gill opening (Fig. 2) large, distance between upper and lower extremities about 15 percent greater than eye diameter; opening formed by a fold of branchiostegal membrane which originates at articular base of the 4th or 5th pectoral fin-ray (counting ventrad), continues antero-ventrad across pectoral base and reunites with pectoral fin along its proximoventral margin; pectoral fin base not completely concealed by the gill membrane. Dorsal fin origin well posteriorly of vertical from tip of adpressed pectoral fin; the two anterior spines of similar length, not more closely spaced than those which follow; spacing of anterior segmented rays about 20 percent less than that of spinous elements; 1st anal fin-ray about 10 percent shorter than subsequent rays; last two dorsal and anal rays not approximated at their bases, the terminal rays united to caudal fin by membranes extending to tips of distal spiniform caudal elements; all segmented dorsal and anal fin-rays are branched. Caudal fin with 17 segmented rays (2 + 12 + 3) and at least 5 spiniform elements above and below; pectoral fin somewhat pointed, fin-rays



FIG. 2. Left gill opening of *Microdesmus bahianus*. Upper point of origin near base of 4th (from uppermost) pectoral ray; lower point of origin on proximoventral margin of pectoral fin.

simple, the 6th-7th the longest; pelvic fin long and slender, the inner ray about 2.4 times the length of the short outer ray and 1.5 times the length of the middle segmented element. Anal fin origin beneath interspace between dorsal fin elements 16 and 17.

Scales usually well separated, seldom touching, about 25 in irregular series between anal fin origin and dorsal fin base; scale diameters range

from 0.15 to about 0.3 mm, smallest on head; tip of snout and lower jaw naked, remainder of head and body scaled; proximal third of caudal fin scaled, other fins naked.

Proximal pterygiophore of 1st dorsal spine inserted between 10th and 11th neural spines; 1st neural spine slender, pointed, about a third shorter than fellows; 2nd–12th neural spines stronger and with blunt or spatulate tips, remaining neural spines slender and distally pointed; ossified frontals fail to reach mesethmoid; no predorsal interneurons visible in radiograph.

Ground color, in alcohol, tan; a broad brownish stripe originates at snout tip and continues along dorsum to caudal peduncle; a similar stripe begins near tip of lower jaw and continues posteriad across lower half of eye and above pectoral fin base to caudal peduncle where the separate identities of dorsal and lateral stripes are lost in a generalized shading of micromelanophores; presence of a third, narrow, dark stripe is indicated by a faint concentration of micromelanophores along anal fin base; venter pale. Dark stripes are formed by localized concentrations of brown micromelanophores separated by more or less immaculate stripes of ground color; widths of dark stripes, taken near middle of abdomen, approximately equal to that of intervening pale stripe; barlike extensions of the dark lateral stripe continue ventrad under lower jaw and beneath eye; scales frequently margined posteriad with brown; dorsal and caudal fin supports faintly lined with micromelanophores, fins otherwise immaculate; eye black.

Etymology: The name *bahianus* refers to the Brazilian state of Bahia wherein the type-locality is located.

Comparisons: Counts of dorsal spines and anal fin-rays of *Microdesmus bahianus* overlap those of *Cerdale floridana* Longley. The freckled coloration of *floridana* together with its combination of tubiform gill opening, dorsal fin origin in advance of pectoral tip and modal counts of 45 vertebrae and 14 pectoral fin-rays precludes confusion of these western Atlantic species.

Posterior displacement of dorsal fin origin immediately distinguishes *Microdesmus bahianus* from all congeners except the west African *M. aethiopicus* Chabanaud and *M. retropinnis* Jordan and Gilbert from the eastern Pacific. The 1st proximal pterygiophore is typically inserted between neural spines 4 and 5 in most species but it falls between 5 and 8 (usually between 7 and 8) in *aethiopicus*, between 10 and 11 in the holotype of *bahianus* and between 12 and 15 (usually between 13 and 14) in *retropinnis*. Location of this pterygiophore is a conservative character throughout the Microdesmidae wherein only *Cerdale ionthas* Jordan and Gilbert, *Microdesmus aethiopicus* and *M. retropinnis* exhibit the maximum intraspecific shift through three vertebrae.

The new Brazilian species differs from *aethiopicus* in having fewer dorsal fin elements (47–50 in *aethiopicus*), simple rather than branched pectoral fin-rays and a completely different color pattern. Fin-ray branching is ontogenetic in *Microdesmus* (Dawson, 1968) and fully

branched dorsal and anal rays show the holotype of *bahianus* to be an adult or near adult fish. Presence of simple pectoral fin-rays in adults is considered to be characteristic of *bahianus*. The primary color pattern of *aethiopicus* consists of dark blotches on the head and well marked chevron-like bars on the body (Chabanaud, 1927; Robins, 1966), but there is no trace of the striped pattern found in *bahianus*.

Somewhat closer relationship is suggested between *bahianus* and *M. retropinnis* wherein pectoral fin-rays are also unbranched and young (to about 36 mm SL) may have continuous dorsal and lateral stripes. The Pacific species differs in total vertebral counts (5-9 more than *bahianus*), abdominal vertebrae are more numerous than caudal, and the juvenile stripes transform into longitudinal series of separate quadrate blotches in adults. A striped pattern also occurs in *Clarkichthys bilineatus* (Clark) and *Gunnellichthys pleurotaenia* Bleeker from Pacific waters but this character alone clearly distinguishes *Microdesmus bahianus* from known Atlantic wormfishes.

Remarks: Although not considered a paratype, I provisionally identify a distorted young fish (ANSP 103427; about 27 mm SL) from Martinique as *Microdesmus bahianus*. This specimen was collected at a depth of 11-18 meters near a reef off Point Caracoli on 7 July 1965 by J. C. Tyler and party. Due to its condition accurate measurements are impossible, but the following counts were obtained: dorsal spines 12, segmented dorsal rays 28, total dorsal elements 40; anal rays 27; pectoral rays 11; anal fin origin beneath interspace between dorsal elements 15-16; proximal pterygiophore of 1st dorsal spine inserted between neural spines 8-9; total vertebrae 49. The dorsal fin originates behind a vertical from pectoral fin tip, pectoral fin-rays are simple, some posterior dorsal and anal rays are branched, and persistent melanophores show the presence of continuous dorsal and lateral stripes in the largely faded specimen. In these characters this fish agrees with *bahianus* or falls within the expected range of variation, but I withhold positive identification due to condition of the specimen.

The holotype was collected from a rocky tidepool on a generally unprotected Atlantic shore. This habitat, together with the reef collection from Martinique, suggests that *Microdesmus bahianus* prefers open coastal environments rather than estuaries. No other *microdesmids* were taken with the holotype but one *Cerdale floridana* (ANSP 105753, 35 mm SL) was collected with the Martinique specimen.

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